Claims:

1. A coated cutting tool which comprises a base material of a hard alloy comprising a hard phase of tungsten carbide and at least one material selected from the group consisting of a carbide, a nitride and a carbonitride of a metal selected from the group consisting of the Group 4, 5 and 6 of the Periodic Table and a mutual solid solution thereof and a binder phase of at least one element selected from the group consisting of Fe, Ni and Co, and a hard coating film formed on the surface of the base material by a chemical vapor deposition method, wherein the hard coating film has a columnar crystal layer comprising at least one material selected from the group consisting of a carbide, a nitride and a carbonitride of titanium, the columnar crystal layer contains particles having crystal particle diameters in a direction horizontal to the interface between the hard coating film and the base material are large and particles having crystal particle diameters in the same direction are small, and the ratio of the average particle diameter of the large particles to the average particle diameter of the small particles is 3 to 50.

2. The coated cutting tool according to Claim 1, wherein the crystal particle diameters in the horizontal direction of the large particles are 0.4 to 10 μm, and the crystal particle diameters in the horizontal direction of the small particles are 0.01 to 0.25 μm.

3. The coated cutting tool according to Claim 1, having agglomerations of the large particles, which have an average particle diameter of 2 to 200 μm, dispersed therein.

4. The coated cutting tool according to Claim 1, where the agglomerations are apart from each other at a spacing of 0.5 to 200 μm.

5. The tool according to Claim 1, wherein the hard phase of the coated base material has a residual compressive stress of 30 to 80 kg/mm^2.

6. A method for producing a coated cutting tool which comprises forming a hard coating film by a chemical vapor deposition method on a surface of a hard metal base material of a hard alloy comprising a hard phase of tungsten carbide and at least one material selected from the group consisting of a carbide, a nitride and a carbonitride of at least one metal selected from the group consisting of the Group 4, 5 and 6 of the Periodic Table and a mutual solid solution thereof and a binder phase of at least one element selected from the group consisting of Fe, Ni and Co, wherein the hard coating film comprises at least one material selected from the group consisting of a carbide, a carbonitride and a carbonitroxide of titanium, and a hydrocarbon gas mainly comprising ethane is used as a carbon element-feeding gas for forming the hard coating film.

7. The method according to Claim 6, wherein the hydrocarbon gas comprises at least one selected from methane, acetonitrile and propane, in addition to ethane.

8. The method according to Claim 6, wherein the coating film formed by chemical vapor deposition contains at least one selected from the carbide, carbonitride and carbonitroxide of titanium, and ethane is used as the carbon element-feeding gas for forming the coating film.

9. The method according to Claim 6, wherein at least one of the above coating films of the carbide, carbonitride and carbonitroxide of titanium has a columnar crystal structure.

10. The method according to Claim 6, wherein a compressive residual stress is applied by at least one selected from ion implantation, shot peening and heat treatment.